MODEL 770 – INCREMENTAL ENCODER

FEATURES

Slim Profile—Only 1.00" Deep
Fits NEMA Size 56C Thru 184C Motor Faces (4.5" AK)
Incorporates Opto-ASIC Technology
Resolutions to 4096 CPR

The Model 770 C-Face encoder is a rugged, high resolution encoder designed to mount directly on NEMA C-Face motors. Both sides of the encoder are C-Face mounts, allowing additional C-Face devices to be mounted to this encoder. Unlike many C-Face kit type encoders, the Model 770 contains precision bearings and an internal flex mount, virtually eliminating encoder failures and inaccuracies induced by motor shaft runout or axial endplay. The advanced Opto-ASIC design provides the advanced noise immunity necessary for many industrial applications. This encoder is ideal for applications using induction motors and flux vector control. The Model 770 provides speed and position information for drive feedback in a slim profile—only 1.00" thick. The Thru-Bore design allows fast and simple mounting of the encoder directly to the accessory shaft or to the drive shaft of the motor, using the standard motor face (NEMA sizes 56C - 184C). The tough, all metal housing resists the vibration and hazards of an industrial environment.

COMMON APPLICATIONS

Motor Feedback, Velocity & Position Control, Conveyors, Variable Speed Drives, Mixing & Blending Motors, Assembly & Specialty Machines

MODEL 770 ORDERING GUIDE

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

770	–	A	–	H	–	1024	–	Q	–	OC	–	A	–	Y	–	N	–	N	–	CE

MODEL
770 4.5" NEMA "AK" Dimension

OPERATING TEMPERATURE
S 0° to 70° C
H 0° to 100° C

CYCLES PER REVOLUTION
1 - 4096
See *CPR Options* below for available resolutions.
Price adder for CPR >1024

OUTPUT TYPE
5 - 28V In/Out[3]
OC Open Collector
PU Pull-Up Resistor
PP Push-Pull
HV Line Driver[4]

C-FACE GASKET KIT OPTION[1]
"B" HOUSING ONLY
N No
Y Yes

MATING CONNECTOR
N No Connector
Y Yes

CERTIFICATION
N None
CE CE Marked[7]

HOUSING STYLE
A Cover completely encloses motor shaft and eliminates access to motor shaft; IP65 rated. Includes C-face Gasket Kit.
B Thru-Bore housing version with IP50 dust seal[1]

NUMBER OF CHANNELS[2]
Channel A Leads B
Q Quadrature A & B
R Quadrature A & B with Index
Channel B Leads A
K Reverse Quadrature A & B
D Reverse Quadrature A & B with Index
See http://www.encoder.com/literature/index-phasing.pdf for additional options, and waveforms.

BORE SIZE
A 5/8", 0.625"
B 3/4", 0.750"
C 7/8", 0.875"
D 1", 1.000"
H 14 mm
I 19 mm
K 24 mm

CONNECTOR TYPE[5]
P 24" Cable with Gland Nut[6]
B Terminal Strip in Conduit Box
X 10-pin MS on Conduit Box
Y 7-pin MS on Conduit Box
J 5-pin M12 on Conduit Box
K 8-pin M12 on Conduit Box
L 10-pin Industrial Clamp

MODEL 770 CPR OPTIONS

0060	0100	0120	0240	0250	0256	0500
0512	0600	1000	1024	2048	2500	4096

Contact Customer Service for other disk resolutions; not all disk resolutions available with all output types.

NOTES:

1. Thru-Bore version may be IP65 sealed if mounted between two C-Face devices with optional gasket kit. Select 'Yes' under C-Face Gasket Kit Option.
2. Contact Customer Service for index gating options.
3. 5 to 24 VDC max for high temperature option.
4. Not available with 5-pin M12 connector. Available with 7-pin MS connector only without Index Z.
5. For mating connectors, cables, and cordsets see Encoder Accessories on page 102 or visit www.encoder.com. For Pin Configuration Diagrams, see page 107 or visit www.encoder.com.
6. For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: P/6 = 6 feet of cable.
7. Please refer to **Technical Bulletin TB100: When to Choose the CE Option** at www.encoder.com.

MODEL 770 SPECIFICATIONS

Electrical

Input Voltage..... 4.75 to 28 VDC max for temperatures up to 70° C
4.75 to 24 VDC for temperatures between 70° C to 100° C
Input Current ..... 100 mA max with no output load
Input Ripple..... 100 mV peak-to-peak at 0 to 100 kHz
Output Format ..... Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the mounting face.
See *Waveform Diagrams*.
Output Types ..... Open Collector- 100 mA max per channel
Pull-Up- 100 mA max per channel
Push-Pull- 20 mA max per channel
Line Driver- 20 mA max per channel
(Meets RS 422 at 5 VDC supply)
Index..... Once per revolution.
0001 to 0474 CPR: Ungated
0475 to 4096 CPR: Gated to output A
See *Waveform Diagrams*.
Max Frequency ..... 200 kHz
Noise Immunity..... Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Quadrature..... 67.5° electrical or better is typical,
Edge Separation 54° electrical minimum at temperatures > 99° C

Rise Time..... Less than 1 microsecond

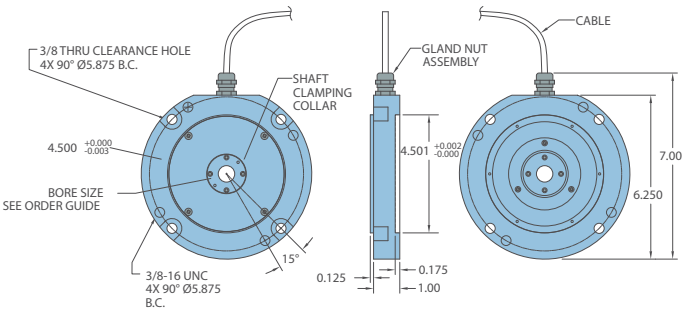
Mechanical

Max Shaft Speed..... 6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
Bore Tolerance ..... +0.0015"/-0.000"
User Shaft Tolerances
Radial Runout ..... 0.005"
Axial Endplay..... ±0.050"
Moment of Inertia ... 3.3×10^{-3} oz-in-sec^2 typical
Housing ..... All metal construction
Weight..... 2.60 lb with gland nut
3.00 lb with all other connector options
Note: All weights typical

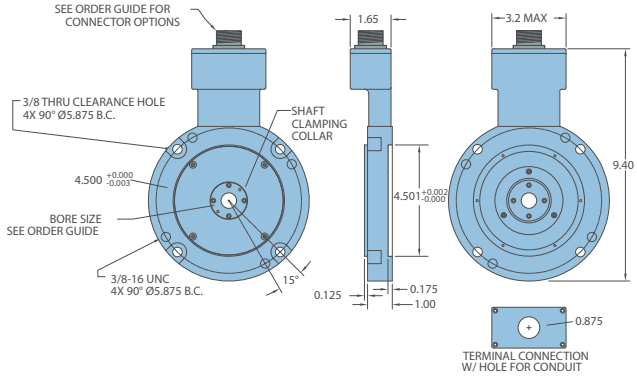
Environmental

Storage Temp ..... -25° to 100° C
Humidity..... 98% RH non-condensing
Vibration..... 10 g @ 58 to 500 Hz
Shock..... 50 g @ 11 ms duration
Sealing ..... IP65 for Option A housing style with gasket kit IP50 for Option B housing style

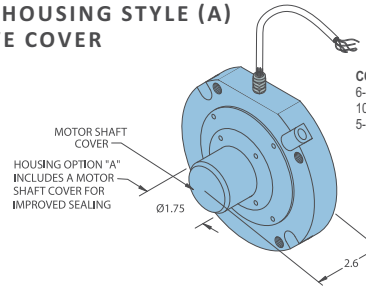
MODEL 770 WITH GLAND NUT (P)



MODEL 770 WITH CONDUIT BOX (B, X, Y, J, K)



OPTIONAL HOUSING STYLE (A) PROTECTIVE COVER

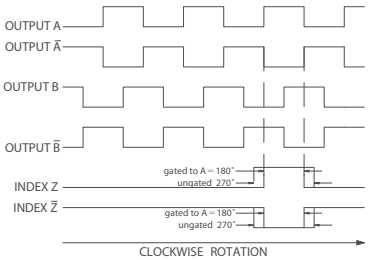


CONNECTOR TYPE	HEIGHT
6- OR 7-PIN MS	0.67"
10-PIN MS	0.90"
5- OR 8-PIN M12	0.50"

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified.

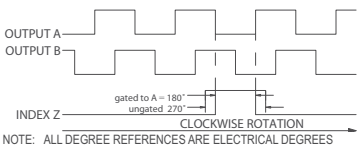
WAVEFORM DIAGRAMS

Line Driver and Push-Pull



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.
WAVEFORM SHOWN WITH OPTIONAL COMPLEMENTARY SIGNALS Ā, B̄, Z̄ FOR HV OUTPUT ONLY.

Open Collector and Pull-Up



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES
INDEX IS POSITIVE GOING

WIRING TABLE

Function	Gland Cable† Wire Color	5-pin M12++ PU, PP, OC	8-pin M12++	10-pin MS	7-pin MS HV	7-pin MS PU, PP, OC	Term Block	10-pin Indust. Clamp
Com	Black	3	7	F	F	F	2	1
+VDC	Red	1	2	D	D	D	1	6
A	White	4	1	A	A	A	3	3
A'	Brown	--	3	H	C	--	4	8
B	Blue	2	4	B	B	B	5	2
B'	Violet	--	5	I	E	--	6	7
Z	Orange	5	6	C	--	C	7	4
Z'	Yellow	--	8	J	--	--	8	9
Case	--	--	--	G**	G**	G**	--	--
Shield	Bare*	--	--	--	--	--	9+	10+

*CE Option: Cable shield (bare wire) is connected to internal Case.
**CE Option: Pin G is connected to Case. Non-CE Option: Pin G has No Connection.
+CE Option: Pin G is connected to Case. Non CE Option: Pin 8 has No Connection.
++CE Option: Read *Technical Bulletin TB111* at www.encoder.com.
†Standard cable is 24 AWG conductors with foil and braid shield.